

January 17, 2006

Memo re: Response to USEPA review of Draft Screening-Level Ecological Risk Assessment Work Plan

In this memo we provide a disposition of comments including responses and/or clarifications regarding each of the comments that were raised by the USEPA review of the Draft Screening-Level Ecological Risk Assessment (SLERA) Work Plan.

Responses and clarifications will be presented in Arial font along with the original comment text as provided in the review by USEPA (dated October 14, 2005). For clarity, the original comment text will be indented and italicized.

1. This workplan needs to be revised to incorporate MDEQ goals and requirements. Specifically, a risk management goal needs to be developed by MDEQ which states what level of resource protection is expected for water (e.g., refer to beneficial uses in Michigan water quality standards), sediment and soil.

The SLERA approach described in this work plan is designed to be both conservative and protective. Maximum concentrations in environmental media will be compared to media-specific benchmarks. The level of resource protection provided by this work plan is determined by the conservative media-specific benchmarks that have been established by the various regulatory agencies for screening purposes. Where possible benchmarks from the state and USEPA Region V will be used. The intent is to eliminate insignificant hazards while identifying contaminants whose concentrations may be sufficiently great as to potentially pose risks to ecological receptors.

2. Information needs to be provided on how threatened and endangered species will be addressed in the risk assessment. Consultation with U.S. Fish and Wildlife Service is required and needs to be supported with written documentation.

This is more appropriately addressed in the BERA as the SLERA is already designed to compare maximal exposures to sensitive, screening ecological benchmarks, in accordance with applicable guidance.

In section 3.4 of the BERA, "Identification of Potential Ecological Receptors" it is stated that, "Threatened and endangered species that have potential to be present on the site will be evaluated in consultation with USFW."

3. The MDEQ needs to establish the default list of screening level ecological benchmarks (Section 3.2.1) and the corresponding criteria to develop benchmarks when none exists. A chronic no-adverse-effect-level (NOAEL) for the most sensitive species (likely to be present) is recommended for the ecological benchmark. The USEPA Region 5 RCRA Ecological Screening Levels (to be updated August 2005) should be considered for the default benchmarks.

For soils, the Eco-SSLs and their methodology need to be followed. For water, the Michigan water quality standards needs to be followed. For sediment, the AConsensus based threshold effect concentrations (TEC) (MacDonald et. al. 2000, Arch Environ Contam Toxicol 39:20-31, Table 2)

needs to be used to protect benthic fauna. The development of sediment benchmarks needs to follow the AProcedure for the derivation of equilibrium partitioning sediment benchmarks (ESBs) for the protection of benthic organisms@ (EPA-600-R-02-009, ...-010, ...-011, ... -012, and ... -013). Since the above sediment benchmarks do not consider the potential for bioaccumulation and trophic transfer to other aquatic life or wildlife, persistent bioaccumulative chemicals need to be retained for the baseline ERA. The Michigan DEQ needs to establish a list of bioaccumulative chemicals. The EPA report (EPA/823/R-00-001) by Michael Kravitz (see Table 4-2) can be used to create a list of bioaccumulative chemicals. This report is available at (<http://www.epa.gov/ost/cs/biotesting/bioaccum.pdf>).

The SLERA text has been revised to more clearly describe the benchmark methodology. The default ecological screening benchmarks are from USEPA Region 5, when available. Other benchmark criteria will be evaluated or developed when no default value is available.

Please note that some of the ecological benchmarks listed in section 3.2.1 do not represent current benchmarks (e.g., EPA 1999 National Recommended Water Quality Criteria and EPA 1996 ECO Update - Ecotox Thresholds).

These benchmarks have been removed from the list of benchmarks to be considered. As for whether they are current, USEPA currently includes them on its website for ecological screening benchmarks at <http://www.epa.gov/region5/superfund/ecology/html/screeningguide.htm>.

4. The screening level data quality objectives in Section 2.1 needs to add chemical detection limits, which corresponds with the screening level ecological benchmarks. This will ensure usable data to support the ERA@ (as identified in the SLERA Workplan Appendix A, 3rd sentence of the Introduction, Section 1.0).

The screening-level ERA will rely on all valid data that is available at the time of SLERA evaluation. The SLERA workplan does not propose the collection of additional samples for screening-level purposes and as such does not establish chemical detection limits. Appendix A of the SLERA workplan includes a sampling work plan, which includes target chemical detection limits, and the report resulting from the successful completion of that sampling work plan.

5. This workplan prematurely presents steps associated with the baseline ERA (i.e., analysis and risk characterization) and these steps need to be removed from the Screening ERA. These steps are not supported in the decision tree (Figure 4.1).

The text has been modified as suggested.

6. The screening ERA will evaluate maximum concentrations in the environmental media (water, sediment and soil). The reference to maximum exposures@ in Section 4.1 needs to be revised. Likewise, in section 4.1, third paragraph the 2nd and 4th choices for selecting COPECs needs to be deleted as these are distinct steps for the Baseline ERA. The 3rd choice (background comparison) needs to be moved to the uncertainty discussion in section 4.2.

The text referring to “maximum exposures” has been modified as suggested. The 4th approach (frequency of detection) for selecting COPECs has been deleted as suggested. The 2nd approach (comparison of exposure dose to TRV) has been retained and text has been added to the beginning of section 3.0 which explains that this option will be used in the SLERA when pertinent benchmarks are not available and a screening level needs to be developed. Section 3.0 further describes how the estimates of exposure and effects would be conducted in a conservative manner consistent with the overall SLERA approach. The 3rd approach (background comparison) has been retained. Additional text has been added to clarify this approach and it is also presented in figure 4-1.

7. Figure 4-1 Decision Tree for Screening COPEC=s
a. When the AMDL is greater than the benchmark@ gets a Yes@ response, the route needs to go to Retain COPEC@ as discussed in workplan. The collect additional data@ option, if applied, needs to route the process back to the initial decision step.

The figure has been modified as suggested.

b. The term COPEC_{ref}@ is not defined or discussed in the report. It's not clear if this is intended to be naturally occurring background levels of inorganic metals.

A definition of [COPEC_{ref}] as the COPEC concentration at the reference area or otherwise established background concentration has been added to the text.

8. Since the screening ERA uses default exposure and bioavailability assumptions, discussion of these topics needs to be removed from section 4.2 and presented in the baseline ERA.

The text has been modified to more clearly represent the evaluation of uncertainty associated with the SLERA.

9. In Section 4.3, Scientific Management Decision Point #1, a fourth option needs to be considered: There is enough information to conclude that ecological risks are high enough to implement an interim measure or site cleanup activity.

USEPA guidance states that a decision can be made to proceed with cleanup after any tier of the ERA process and the example is given of sites of relatively small size where contamination has a sharply defined boundary. Conversely, for many sites it is preferable to move directly to a baseline ERA after the initial screening when remediation to conservatively derived levels is not the obvious choice in terms of cost and environmental impact. Since the existing information from past and ongoing field studies by MSU have not indicated any obvious ecosystem anomalies or sharply defined boundaries of contamination that would warrant immediate interim action, this option has not been added to the SLERA workplan.